



05882.0044.NPUS02
SEQUENCE LISTING

<110> Tsurushita, Naoya
Kumar, Shankar
Vasquez, Maximiliano

<120> Humanized Chicken Antibodies

<130> 05882.0044.NPUS02

<140> 10/788,625

<141> 2003-02-26

<160> 103

<170> PatentIn version 3.2

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gcccggcaag gggctggaat acgtcgctga aattaccaac actggtagga ccagaagata      180
cgggggcgggc gtgaagggcc gtgccaccat ctcgagggac aacgggcaga gcacagttag      240
gctgcagctg aacaacctca gggctgagga caccggcacc tactactgcg ccagaagtag      300
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20           25           30
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Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val
35           40           45
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Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly Ala Ala Val
 50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser Thr Val Arg
 65 70 75 80

Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr Tyr Tyr Cys
 85 90 95

Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys Ala Gly Asn
 100 105 110

Ile Asn Ala Trp Gly His Gly Thr Glu Val Ile Val Ser Ser
 115 120 125

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 tgtcactgtg atctatgaca acaccaggag accctcggac atcccttcac gattctccgg 180
 ttccaaatcc ggctccacag ccacattaac catcactggg gtccaagccg acgacgaggc 240
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 cctgaccgtc ct 312

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Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Leu Gly Gly Thr Val
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Lys Ile Thr Cys Ser Gly Gly Tyr Ser Gly Tyr Tyr Gly Trp Tyr Gln
 20 25 30

Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val Ile Tyr Asp Asn Thr
 35 40 45

Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser Gly
50 55 60

Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln Ala Asp Asp Glu Ala
65 70 75 80

Val Tyr Phe Cys Gly Thr Trp Asp Ser Ser Arg Val Gly Ile Phe Gly
85 90 95

Ala Gly Thr Thr Leu Thr Val Leu
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Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala
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<212> PRT
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Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr Leu Gln
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Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg
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Trp Gly Gln Gly Thr Leu Val Thr Val
1 5

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Thr Val Arg Ile Thr Cys
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Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr
1 5 10 15

<210> 11
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<213> Homo sapiens

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Leu Thr Ile Thr Gly Ala Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys
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<213> Homo sapiens

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gcctggcaag ggactggaat acgtcgctga aattaccaac actggtagga ccagaagata 180
cggagctgcg gtgaagggcc gtgccaccat ctcgagggaac aacgccaaga acacagtgtgta 240
cctgcagatg aacagcctca gggctgagga caccgccgtg tactactgcg ccagaagtag 300
tgttttattct tgttcttatg gttggtgtgc tggtaacatc aacgcatggg gccaggggaac 360
cctggtcacc gtctcctc 378

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<213> Homo sapiens

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20 25 30

Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val
35 40 45

Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly Ala Ala Val
50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys

85

90

95

Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys Ala Gly Asn
 100 105 110

Ile Asn Ala Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 115 120 125

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 tcctgtcact gtgatttatg acaacaccag gagaccctcg gacatccctt cacgattctc 180
 cggttccaaa tccgggtcca cagccacatt aaccatcact ggagtccaag ccgaggacga 240
 ggctgactat tactgtggga cctgggacag cagccgtgtt ggtatatttg gaggtgggac 300
 aaagctgacc gtcct 315

<210> 16
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 <212> PRT
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<400> 16

Ser Ser Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ala Leu Gly Gln
 1 5 10 15

Thr Val Arg Ile Thr Cys Ser Gly Gly Tyr Ser Gly Tyr Tyr Gly Trp
 20 25 30

Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Thr Val Ile Tyr Asp Asn
 35 40 45

Thr Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser
 50 55 60

Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln Ala Glu Asp Glu
 65 70 75 80

Ala Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Arg Val Gly Ile Phe
85 90 95

Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105

<210> 17
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<220>
<223> Synthetic Primer

<400> 17
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<210> 18
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<212> DNA
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<220>
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<400> 18
cccggcgccg acaacgggtt ggagggacct c 31

<210> 19
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<212> DNA
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<400> 19
gggtctagag ccattggact ctccgtcctg 30

<210> 20
<211> 33
<212> DNA
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<220>
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cccgctcagc cctccaaatt ttcacccctg atc 33

<210> 21

<211> 45
 <212> DNA
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 <220>
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 <210> 22
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 <212> DNA
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 <400> 22
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 <210> 23
 <211> 37
 <212> DNA
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 <220>
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 <400> 23
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 <210> 24
 <211> 36
 <212> DNA
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 <220>
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 <400> 24
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 <210> 25
 <211> 37
 <212> DNA
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 <220>
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 <400> 25
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<210> 26
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 <212> DNA
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 <220>
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 <400> 26
 agccacagat cttaggacgg tcagggttgt cccg 34

 <210> 27
 <211> 70
 <212> DNA
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 <220>
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 <400> 27
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 ttccaggttc 70

 <210> 28
 <211> 70
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 28
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 cccagagaag 70

 <210> 29
 <211> 71
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 29
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 gctattatgg c 71

 <210> 30

<211> 71
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 30
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 gccgctgtaa c 71

 <210> 31
 <211> 73
 <212> DNA
 <213> Artificial

 <220>
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 <400> 31
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 ggttccaaat ccg 73

 <210> 32
 <211> 69
 <212> DNA
 <213> Artificial

 <220>
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 <400> 32
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 cggagaatc 69

 <210> 33
 <211> 73
 <212> DNA
 <213> Artificial

 <220>
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 gtatatatttg agg 73

 <210> 34
 <211> 73

<212> DNA
 <213> Artificial

 <220>
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 <400> 34
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 ataccaacac ggc 73

 <210> 35
 <211> 20
 <212> DNA
 <213> Artificial

 <220>
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 <400> 35
 ctagccacgc gtccaccatg 20

 <210> 36
 <211> 20
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 <220>
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 <400> 36
 gactcgtcta gagggagaag 20

 <210> 37
 <211> 78
 <212> DNA
 <213> Artificial

 <220>
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 <400> 37
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 ctggcgtcca ctctcagg 78

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 <211> 77
 <212> DNA
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 <220>
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agagtggacg ccagcag 77

<210> 39
<211> 79
<212> DNA
<213> Artificial

<220>
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<400> 39
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atgctctggg tgcgacagg 79

<210> 40
<211> 78
<212> DNA
<213> Artificial

<220>
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<400> 40
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tgtcgacccc agagcatg 78

<210> 41
<211> 79
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 41
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gggacaacgc caagaacac 79

<210> 42
<211> 79
<212> DNA
<213> Artificial

<220>
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<400> 42
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 gttcttggcg ttgtcccta 79

<210> 43
 <211> 77
 <212> DNA
 <213> Artificial

<220>
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<400> 43
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 gtaacatcaa cgcatgg 77

<210> 44
 <211> 79
 <212> DNA
 <213> Artificial

<220>
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<400> 44
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 catgcgttga tgttaccag 79

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 <212> DNA
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<220>
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<400> 45
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<210> 46
 <211> 21
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<400> 46
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<210> 47
 <211> 108
 <212> PRT
 <213> Chicken

<400> 47

Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro Gly Glu Thr Val
 1 5 10 15

Lys Ile Thr Cys Pro Gly Gly Gly Ile Tyr Ala Gly Arg Tyr Tyr Gly
 20 25 30

Tyr Gly Trp Phe Gln Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val
 35 40 45

Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser
 50 55 60

Gly Ser Ala Ser Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln
 65 70 75 80

Ala Asp Asp Glu Ala Val Tyr Phe Cys Gly Ser His Asp Ser Asn Val
 85 90 95

Gly Val Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
 100 105

<210> 48
 <211> 136
 <212> PRT
 <213> Chicken

<400> 48

Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr Pro Gly Gly
 1 5 10 15

Gly Leu Ser Leu Val Cys Lys Ala Ser Gly Phe Asp Phe Ser Asn Tyr
 20 25 30

Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly Ala Ala Val
 50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser Thr Val Arg
65 70 75 80

Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr Tyr Tyr Cys
85 90 95

Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly Arg Thr Ser
100 105 110

Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala Trp Gly His
115 120 125

Gly Thr Glu Val Ile Val Ser Ser
130 135

<210> 49
<211> 109
<212> PRT
<213> Chicken

<400> 49

Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val Ala Leu Gly Gln
1 5 10 15

Thr Val Arg Ile Thr Cys Pro Gly Gly Gly Ile Tyr Ala Gly Arg Tyr
20 25 30

Tyr Gly Tyr Gly Trp Phe Gln Gln Lys Pro Gly Gln Ala Pro Val Thr
35 40 45

Val Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe
50 55 60

Ser Gly Ser Ala Ser Gly Ser Thr Ala Ser Leu Thr Ile Thr Gly Ala
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Ser His Asp Ser Asn
85 90 95

Val Gly Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
100 105

<210> 50
 <211> 136
 <212> PRT
 <213> Chicken

<400> 50

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Asn Tyr
 20 25 30

Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly Ala Ala Val
 50 55 60

Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Val Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly Arg Thr Ser
 100 105 110

Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala Trp Gly Gln
 115 120 125

Gly Thr Leu Val Thr Val Ser Ser
 130 135

<210> 51
 <211> 73
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic Primer

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 gttccacagg ttc 73

<210> 52
 <211> 75
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 52
 cctgactgtc tgtcccaagg ccacagacac agcaggggtcc tgagtcagct cagaagaacc 60
 tgtggaacct ggaac 75

 <210> 53
 <211> 73
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 53
 ccttgggaca gacagtcagg atcacatgcc ccggaggtgg catctatgct ggacgtact 60
 atggttatgg ctg 73

 <210> 54
 <211> 70
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 54
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 catagtagcg 70

 <210> 55
 <211> 70
 <212> DNA
 <213> Artificial

 <220>
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 <400> 55
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 gctccgcatc 70

 <210> 56

<211> 69
 <212> DNA
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 <220>
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 <400> 56
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 agaatcgtg 69

 <210> 57
 <211> 66
 <212> DNA
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 <220>
 <223> Synthetic Primer

 <400> 57
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 atttgg 66

 <210> 58
 <211> 71
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

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 acattgctgt c 71

 <210> 59
 <211> 27
 <212> DNA
 <213> Artificial

 <220>
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 <400> 59
 ctacgaacgc gtccaccatg gagaaag 27

 <210> 60
 <211> 29
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic Primer

 <400> 60'
 gacttctcta gagggagaag agactcacc 29

 <210> 61
 <211> 80
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 61
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 tgcactctga ggtgcagctg 80

 <210> 62
 <211> 80
 <212> DNA
 <213> Artificial

 <220>
 <223> Synthetic Primer

 <400> 62
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 cagctgcacc tcagagtga 80

 <210> 63
 <211> 80
 <212> DNA
 <213> Artificial

 <220>
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 gccaggctcc agggaagggg 80

 <210> 64
 <211> 80
 <212> DNA
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 <220>
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<400> 64
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ccccttcctt ggagcctggc 80

<210> 65
<211> 80
<212> DNA
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<220>
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<400> 65
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cagtgtatct gcaaataaac 80

<210> 66
<211> 80
<212> DNA
<213> Artificial

<220>
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ttcatttgca gatacactga 80

<210> 67
<211> 80
<212> DNA
<213> Artificial

<220>
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<400> 67
agaggtgtta gtccttacag ctgttggtat gccggccgta ctagttatac ttgtcatgca 60
tatactgctg gtagcatcga 80

<210> 68
<211> 80
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 68
tctagaagta cagcagactc acctgaggag acggtgacca gggttccctg gccccatgcg 60
tcgatgctac cagcagtata 80

<210> 69
<211> 26
<212> DNA
<213> Artificial

<220>
<223> Synthetic Primer

<400> 69
ctacgaacgc gtccaccatg ggatgg 26

<210> 70
<211> 28
<212> DNA
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<220>
<223> Synthetic Primer

<400> 70
gacttctcta gaagtacagc agactcac 28

<210> 71
<211> 421
<212> DNA
<213> Chicken

<400> 71
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cagtcaggat cacatgcccc ggaggtggca tctatgctgg acgctactat ggttatggct 180
ggttccagca gaagccagga caggcccctg taactgtcat ctatagcaac gacaagagac 240
cctcggacat cccttcacga ttctctggct ccgcatcagg ctccacagct tccttgacca 300
tactggggc tcaggcggaa gatgaggctg actattactg tgggagccac gacagcaatg 360
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a 421

<210> 72
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<212> PRT
<213> Chicken

<400> 72

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Thr Gly Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val
20 25 30

Ala Leu Gly Gln Thr Val Arg Ile Thr Cys Pro Gly Gly Gly Ile Tyr
35 40 45

Ala Gly Arg Tyr Tyr Gly Tyr Gly Trp Phe Gln Gln Lys Pro Gly Gln
50 55 60

Ala Pro Val Thr Val Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile
65 70 75 80

Pro Ser Arg Phe Ser Gly Ser Ala Ser Gly Ser Thr Ala Ser Leu Thr
85 90 95

Ile Thr Gly Ala Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Ser
100 105 110

His Asp Ser Asn Val Gly Val Phe Gly Gly Gly Thr Lys Leu Thr Val
115 120 125

Leu

<210> 73

<211> 499

<212> DNA

<213> Chicken

<400> 73

acgcgtccac catgggatgg agctggatct ttctcttcct cctgtcagga actgctggcg 60

tgcactctga ggtgcagctg gtggagtctg ggggaggctt ggtccagcct ggggggtccc 120

tgagactctc ctgtgcagcc tctggattcg actttagtaa ctatcagttg cagtgggtcc 180

gccaggctcc agggaagggg ctggagtggg tgggtggtat tggcagcagt ggtagtagca 240

catactacgg agctgcggtt aagggccgag ccaccatctc cagagacaac gccaagaact 300

cagtgtatct gcaaataaac agcctgagag ccgaggacac ggctgtgtat tactgtacca 360

gaggtgtag tccttacagc tggtggtatg ccggccgtac tagttatact tgtcatgcat 420
 atactgctgg tagcatcgac gcatggggcc aggggaaccct ggtcaccgtc tcctcaggtg 480
 agtctgctgt acttctaga 499

<210> 74
 <211> 155
 <212> PRT
 <213> Chicken

<400> 74

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
 20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe
 35 40 45

Ser Asn Tyr Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Trp Val Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly
 65 70 75 80

Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn
 85 90 95

Ser Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly
 115 120 125

Arg Thr Ser Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala
 130 135 140

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 145 150 155

<210> 75
 <211> 406
 <212> DNA

<213> Chicken

<400> 75

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acgcgtctcg accaccatgg agaaagacac actcctgcta tgggtcctac ttctctgggt      60
tccaggttcc acaggtgcgc tgactcagcc ggcctcgggtg tcagcaaacc caggagaaac      120
cgtcaagatc acctgctccg ggggtagcta ctatggctgg taccagcaga agtctcctgg      180
cagtgccctt gtcactgtga tttatgacaa cgacaagaga ccctcggaca tcccttcacg      240
attctccggg tccaaatccg gctccacggg cacattaacc atcactgggg tccaagccga      300
ggatgaggct gtctatttct gtgggagtgc agacagcgcc tatgttggtg tatttggggc      360
cgggacaacc ctgaccgtcc taagtaagta gaatccaaag tctaga                        406
```

<210> 76

<211> 122

<212> PRT

<213> Chicken

<400> 76

```
Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1          5          10          15
```

```
Gly Ser Thr Gly Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro
          20          25          30
```

```
Gly Glu Thr Val Lys Ile Thr Cys Ser Gly Gly Ser Tyr Tyr Gly Trp
          35          40          45
```

```
Tyr Gln Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val Ile Tyr Asp
          50          55          60
```

```
Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys
65          70          75          80
```

```
Ser Gly Ser Thr Gly Thr Leu Thr Ile Thr Gly Val Gln Ala Glu Asp
          85          90          95
```

```
Glu Ala Val Tyr Phe Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly Ile
          100          105          110
```

```
Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
          115          120
```


<210> 77
 <211> 482
 <212> DNA
 <213> Chicken

<400> 77
 acgcgtctcg accaccatgg gatggagctg gatctttctc ttcctcctgt caggaactgc 60
 tggcgtccac tctgccgtga cgttggacga gtccgggggc ggcctccaga cgcccggagg 120
 agcgctcagc ctcgtctgca gggcctccgg gttctctatc ggcagttaca acatgcactg 180
 ggtgcgacag ggcggcgga aggggctgga gtgggtcgct ggtattagcg gtgctggtag 240
 tcgcacagca tggtagggg cgccgggtgaa gggccgtgcc accatctcga gggacaacgg 300
 gcagagcaca gtgaggctgc agctgaacaa cctcagggcc gaggacaccg gcacctacta 360
 ctgcgcaaaa gactatggtg gtagtggttc cccatgggat ggttgggggtg ctgctagttg 420
 gatcgacgca tggggccacg ggaccgaagt catcgtctcc tccggtaaga atggcgtcta 480
 ga 482

<210> 78
 <211> 149
 <212> PRT
 <213> Chicken

<400> 78
 Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr
 20 25 30
 Pro Gly Gly Ala Leu Ser Leu Val Cys Arg Ala Ser Gly Phe Ser Ile
 35 40 45
 Gly Ser Tyr Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Val Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr
 65 70 75 80
 Gly Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln
 85 90 95
 Ser Thr Val Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly

100

105

110

Thr Tyr Tyr Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr
 115 120 125

Gly Trp Gly Ala Ala Ser Trp Ile Asp Ala Trp Gly His Gly Thr Glu
 130 135 140

Val Ile Val Ser Ser
 145

<210> 79
 <211> 102
 <212> PRT
 <213> Chicken

<400> 79

Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro Gly Glu Thr Val
 1 5 10 15

Lys Ile Thr Cys Ser Gly Gly Ser Tyr Tyr Gly Trp Tyr Gln Gln Lys
 20 25 30

Ser Pro Gly Ser Ala Pro Val Thr Val Ile Tyr Asp Asn Asp Lys Arg
 35 40 45

Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser Gly Ser Thr
 50 55 60

Gly Thr Leu Thr Ile Thr Gly Val Gln Ala Glu Asp Glu Ala Val Tyr
 65 70 75 80

Phe Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly Ile Phe Gly Ala Gly
 85 90 95

Thr Thr Leu Thr Val Leu
 100

<210> 80
 <211> 103
 <212> PRT
 <213> Homo sapiens

<400> 80

Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val Ala Leu Gly Gln
 1 5 10 15

Thr Val Arg Ile Thr Cys Ser Gly Gly Ser Tyr Tyr Gly Trp Tyr Gln
 20 25 30

Gln Lys Pro Gly Gln Ala Pro Val Thr Val Ile Tyr Asp Asn Asp Lys
 35 40 45

Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser Lys Ser Gly Ser
 50 55 60

Thr Gly Ser Leu Thr Ile Thr Gly Ala Gln Ala Glu Asp Glu Ala Asp
 65 70 75 80

Tyr Tyr Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly Ile Phe Gly Gly
 85 90 95

Gly Thr Lys Leu Thr Val Leu
 100

<210> 81
 <211> 130
 <212> PRT
 <213> Chicken

<400> 81

Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr Pro Gly Gly
 1 5 10 15

Ala Leu Ser Leu Val Cys Arg Ala Ser Gly Phe Ser Ile Gly Ser Tyr
 20 25 30

Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr Gly Ala Ala
 50 55 60

Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser Thr Val
 65 70 75 80

Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr Tyr Tyr
 85 90 95

Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr Gly Trp Gly
 100 105 110

Ala Ala Ser Trp Ile Asp Ala Trp Gly His Gly Thr Glu Val Ile Val
 115 120 125

Ser Ser
 130

<210> 82
 <211> 130
 <212> PRT
 <213> Homo sapiens

<400> 82

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Ile Gly Ser Tyr
 20 25 30

Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr Gly Ala Ala
 50 55 60

Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Val
 65 70 75 80

Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr
 85 90 95

Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr Gly Trp Gly
 100 105 110

Ala Ala Ser Trp Ile Asp Ala Trp Gly Gln Gly Thr Leu Val Thr Val
 115 120 125

Ser Ser
 130

<210> 83
 <211> 403
 <212> DNA
 <213> Homo sapiens

<400> 83
 acgcgtccac catggagaaa gacacactcc tgctgtgggt cctacttctc tgggttccag 60
 gttccacagg ttcttctgag ctgactcagg accctgctgt gtctgtggcc ttgggacaga 120
 cagtcaggat cacatgctcc gggggtagct actatggctg gtaccagcag aagccaggac 180
 agggccctgt aactgtcatc tatgacaacg acaagagacc ctcgacatc ccttcacgat 240
 tctctggctc caaatcaggc tccacaggct ccttgaccat cactggggct caggcggaag 300
 atgaggctga ctattactgt gggagtgcag acagcgcta tgttggtata tttggcggtg 360
 ggacaaagct gaccgtccta ggtgagtctc ttctccctct aga 403

<210> 84
 <211> 123
 <212> PRT
 <213> Homo sapiens

<400> 84
 Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15
 Gly Ser Thr Gly Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val
 20 25 30
 Ala Leu Gly Gln Thr Val Arg Ile Thr Cys Ser Gly Gly Ser Tyr Tyr
 35 40 45
 Gly Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Thr Val Ile Tyr
 50 55 60
 Asp Asn Asp Lys Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly Ser
 65 70 75 80
 Lys Ser Gly Ser Thr Gly Ser Leu Thr Ile Thr Gly Ala Gln Ala Glu
 85 90 95
 Asp Glu Ala Asp Tyr Tyr Cys Gly Ser Ala Asp Ser Ala Tyr Val Gly
 100 105 110
 Ile Phe Gly Gly Gly Thr Lys Leu Thr Val Leu

115

120

<210> 85
 <211> 481
 <212> DNA
 <213> Homo sapiens

<400> 85
 acgcgtccac catgggatgg agctggatct ttctcttcct cctgtcagga actgctggcg 60
 tgcactctga ggtgcagctg ctggagtctg ggggaggctt ggtccagcct ggggggtccc 120
 tgagactctc ctgtgcagcc tctggattct ctatcggcag ttacaacatg cactgggtcc 180
 gccaggctcc agggaagggg ctggagtggg tggctggtat tagcggtgct ggtagtcgca 240
 cagcatggta cggggcggcg gtgaagggcc gagccaccat ctccagagac aacgccaaga 300
 acacagtgtg tctgcaaagt aacagcctga gagccgagga cacggctgtg tattactgtg 360
 ccaaagacta tgggtgtagt gggtcccat ggtatggttg gggtgctgct agttggatcg 420
 acgcatgggg ccaggaacc ctggtcaccg tctcctcagg tgagtctgct gtacttctag 480
 a 481

<210> 86
 <211> 149
 <212> PRT
 <213> Homo sapiens

<400> 86

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln
 20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Ile
 35 40 45

Gly Ser Tyr Asn Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Trp Val Ala Gly Ile Ser Gly Ala Gly Ser Arg Thr Ala Trp Tyr
 65 70 75 80

Gly Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys
 85 90 95

Asn Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala
 100 105 110

Val Tyr Tyr Cys Ala Lys Asp Tyr Gly Gly Ser Gly Ser Pro Trp Tyr
 115 120 125

Gly Trp Gly Ala Ala Ser Trp Ile Asp Ala Trp Gly Gln Gly Thr Leu
 130 135 140

Val Thr Val Ser Ser
 145

<210> 87
 <211> 6
 <212> DNA
 <213> Artificial

<220>
 <223> Restriction site

<400> 87
 acgcgt

6

<210> 88
 <211> 6
 <212> DNA
 <213> Artificial

<220>
 <223> Restriction site

<400> 88
 tctaga

6

<210> 89
 <211> 79
 <212> PRT
 <213> Homo sapiens

<400> 89

Ser Ser Glu Leu Thr Gln Asp Pro Ala Val Ser Val Ala Leu Gly Gln
 1 5 10 15

Thr Val Arg Ile Thr Cys Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro
 20 25 30

Val Leu Val Ile Tyr Gly Ile Pro Asp Arg Phe Ser Gly Ser Ser Ser
 35 40 45

Gly Asn Thr Ala Ser Leu Thr Ile Thr Gly Ala Gln Ala Glu Asp Glu
 50 55 60

Ala Asp Tyr Tyr Cys Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
 65 70 75

<210> 90
 <211> 87
 <212> PRT
 <213> Homo sapiens

<400> 90

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Trp Val
 20 25 30

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Arg Phe Thr Ile
 35 40 45

Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu
 50 55 60

Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Trp Gly Gln Gly
 65 70 75 80

Thr Leu Val Thr Val Ser Ser
 85

<210> 91
 <211> 412
 <212> DNA
 <213> Chicken

<400> 91
 acgcgtctcg accaccatgg agaaagacac actcctgcta tgggtcctac ttctctgggt 60
 tccaggttcc acaggtgcmc tgactcagcc ggcctcagtg tcagcaaacc tgggaggaac 120
 cgtcaagatc acctgctccg ggggttacag cggctattat ggctggtacc agcagaaatc 180
 acctggcagt gccctgtca ctgtgatcta tgacaacacc aggagaccct cggacatccc 240

ttcacgattc tccgggtcca aatccggctc cacagccaca ttaaccatca ctgggggtcca 300
agccgacgac gaggtgtgtct atttctgtgg gacctgggac agcagccgtg ttggtatatt 360
tggggccggg acaaccctga ccgtcctaag taagtagaat ccaaagtcta ga 412

<210> 92
<211> 124
<212> PRT
<213> Chicken

<400> 92

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
1 5 10 15

Gly Ser Thr Gly Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Leu
20 25 30

Gly Gly Thr Val Lys Ile Thr Cys Ser Gly Gly Tyr Ser Gly Tyr Tyr
35 40 45

Gly Trp Tyr Gln Gln Lys Ser Pro Gly Ser Ala Pro Val Thr Val Ile
50 55 60

Tyr Asp Asn Thr Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser Gly
65 70 75 80

Ser Lys Ser Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln Ala
85 90 95

Asp Asp Glu Ala Val Tyr Phe Cys Gly Thr Trp Asp Ser Ser Arg Val
100 105 110

Gly Ile Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
115 120

<210> 93
<211> 470
<212> DNA
<213> Chicken

<400> 93

acgcgtctcg accaccatgg gatggagctg gatctttctc ttcctcctgt caggaactgc 60

tggcgtccac tctgccgtga cgttggacga gtctgggggc ggctccaga cgcccgagg 120

agcgctcagc ctcgctctgca aggcctccgg gttcaccttc agtagttaca gcatgctctg 180

ggtgcgacag gcgcccgga aggggctgga atacgtcgct gaaattacca acactggtag 240
 gaccagaaga tacggggcgg cggatgaagg cgtgccacc atctcgaggg acaacgggca 300
 gagcacagtg aggctgcagc tgaacaacct cagggtgag gacaccggca cctactactg 360
 cgccagaagt agtgtttatt cttgttctta tggttggtgt gctggtaaca tcaacgcatg 420
 gggccacggg accgaagtca tcgtctcttc cggtaagaat ggcgtctaga 470

<210> 94
 <211> 145
 <212> PRT
 <213> Chicken

<400> 94

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr
 20 25 30

Pro Gly Gly Ala Leu Ser Leu Val Cys Lys Ala Ser Gly Phe Thr Phe
 35 40 45

Ser Ser Tyr Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Tyr Val Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly
 65 70 75 80

Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser
 85 90 95

Thr Val Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr
 100 105 110

Tyr Tyr Cys Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys
 115 120 125

Ala Gly Asn Ile Asn Ala Trp Gly His Gly Thr Glu Val Ile Val Ser
 130 135 140

Ser
 145

<210> 95
 <211> 409
 <212> DNA
 <213> Homo sapiens

<400> 95
 acgcgtccac catggagaaa gacacactcc tgctatgggt cctacttctc tgggttccag 60
 gttccacagg tagctctgag ctgactcagc cgccttcagt gtcagtggcc ctgggacaga 120
 ccgtcaggat cacctgctcc ggagggttaca gcggtctatta tggctggtac cagcagaaac 180
 ctggccaggc tcctgtcact gtgatttatg acaacaccag gagaccctcg gacatccctt 240
 cacgattctc cggttccaaa tccgggtcca cagccacatt aaccatcact ggagtccaag 300
 ccgaggacga ggctgactat tactgtggga cctgggacag cagccgtgtt ggtatatttg 360
 gaggtgggac aaagctgacc gtcctagggtg agtctcttct ccctctaga 409

<210> 96
 <211> 125
 <212> PRT
 <213> Homo sapiens

<400> 96

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15

Gly Ser Thr Gly Ser Ser Glu Leu Thr Gln Pro Pro Ser Val Ser Val
 20 25 30

Ala Leu Gly Gln Thr Val Arg Ile Thr Cys Ser Gly Gly Tyr Ser Gly
 35 40 45

Tyr Tyr Gly Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Thr Val
 50 55 60

Ile Tyr Asp Asn Thr Arg Arg Pro Ser Asp Ile Pro Ser Arg Phe Ser
 65 70 75 80

Gly Ser Lys Ser Gly Ser Thr Ala Thr Leu Thr Ile Thr Gly Val Gln
 85 90 95

Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Arg
 100 105 110

Val Gly Ile Phe Gly Gly Gly Thr Lys Leu Thr Val Leu
 115 120 125

<210> 97
 <211> 469
 <212> DNA
 <213> Homo sapiens

<400> 97
 acgcgtccac catgggatgg agctggatct ttctcttcct cctgtcagga actgctggcg 60
 tccactctga ggtgcagttg gtggagtccg gaggtggact cgtgcagcct ggaggaagcc 120
 tcaggctcag ctgcgccgcc tccgggttca ccttcagtag ttacagcatg ctctgggtgc 180
 gacaggcgcc tggcaaggga ctggaatacg tcgctgaaat taccaacact ggtaggacca 240
 gaagatacgg agctgcggtg aagggccgtg ccaccatctc gagggacaac gccaagaaca 300
 cagtgtacct gcagatgaac agcctcaggg ctgaggacac cgccgtgtac tactgcgcca 360
 gaagtagtgt ttattcttgt tcttatgggt ggtgtgctgg taacatcaac gcatggggcc 420
 agggaaccct ggtcacgcgc tcctccggtg agtcctcaca acctctaga 469

<210> 98
 <211> 145
 <212> PRT
 <213> Homo sapiens

<400> 98

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15

Val His Ser Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln
 20 25 30

Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe
 35 40 45

Ser Ser Tyr Ser Met Leu Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Tyr Val Ala Glu Ile Thr Asn Thr Gly Arg Thr Arg Arg Tyr Gly
 65 70 75 80

Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Ala Lys Asn
 85 90 95

Thr Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
 100 105 110

Tyr Tyr Cys Ala Arg Ser Ser Val Tyr Ser Cys Ser Tyr Gly Trp Cys
 115 120 125

Ala Gly Asn Ile Asn Ala Trp Gly Gln Gly Thr Leu Val Thr Val Ser
 130 135 140

Ser
 145

<210> 99
 <211> 423
 <212> DNA
 <213> Chicken

<400> 99
 acgcgtctcg accaccatgg agaaagacac actcctgcta tgggtcctac ttctctgggt 60
 tccaggttcc acaggtgcmc tgactcagcc ggcctcagtg tcagcaaacc cgggagaaac 120
 cgtcaagatc acctgccccg ggggtggcat ctatgctgga aggtactatg gttatggctg 180
 gttccagcag aagtctcctg gcagtgcacc tgtcactgtg atctatagca acgacaagag 240
 accctcggac atcccttcac gattctccgg ctccgcatcc ggctccacag ccacattaac 300
 catcactggg gtccaagccg acgacgaggc tgtctatttc tgtgggagcc acgacagcaa 360
 tgttggtgta tttggggccg ggacaaccct gaccgtccta agtaagtaga atccaaatct 420
 aga 423

<210> 100
 <211> 128
 <212> PRT
 <213> Chicken

<400> 100

Met Glu Lys Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15

Gly Ser Thr Gly Ala Leu Thr Gln Pro Ala Ser Val Ser Ala Asn Pro
 20 25 30

Gly Glu Thr Val Lys Ile Thr Cys Pro Gly Gly Gly Ile Tyr Ala Gly

35

40

45

Arg Tyr Tyr Gly Tyr Gly Trp Phe Gln Gln Lys Ser Pro Gly Ser Ala
50 55 60

Pro Val Thr Val Ile Tyr Ser Asn Asp Lys Arg Pro Ser Asp Ile Pro
65 70 75 80

Ser Arg Phe Ser Gly Ser Ala Ser Gly Ser Thr Ala Thr Leu Thr Ile
85 90 95

Thr Gly Val Gln Ala Asp Asp Glu Ala Val Tyr Phe Cys Gly Ser His
100 105 110

Asp Ser Asn Val Gly Val Phe Gly Ala Gly Thr Thr Leu Thr Val Leu
115 120 125

<210> 101
<211> 500
<212> DNA
<213> Chicken

<400> 101
accgctctcg accaccatgg gatggagctg gatctttctc ttcctcctgt caggaactgc 60
tggcgtccac tctgccgtga cgttggacga gtccgggggc ggcctccaga cgcccggagg 120
agggctcagc ctcgtctgca aggcctccgg gttcgacttc agcaactatc agttgcagtg 180
gggtgcgccag gcgcccggca aggggctgga gtgggtcggg ggtattggca gcagtggcag 240
tagcacatac tacggggcgg cgggtgaaggg ccgtgccacc atctcgaggg acaacgggca 300
gagcacagtg agactgcagc tgaacaacct cagggctgag gacaccggca cctactactg 360
caccagaggt gttagtcctt acagctgttg gtatgccggc cgtactagtt atacttgta 420
tgcatatact gctggtagca tcgacgcatg gggccacggg accgaagtca tcgtctcctc 480
cggtagaagt ggcgtctaga 500

<210> 102
<211> 155
<212> PRT
<213> Chicken

<400> 102

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15

Val His Ser Ala Val Thr Leu Asp Glu Ser Gly Gly Gly Leu Gln Thr
 20 25 30

Pro Gly Gly Gly Leu Ser Leu Val Cys Lys Ala Ser Gly Phe Asp Phe
 35 40 45

Ser Asn Tyr Gln Leu Gln Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
 50 55 60

Glu Trp Val Gly Gly Ile Gly Ser Ser Gly Ser Ser Thr Tyr Tyr Gly
 65 70 75 80

Ala Ala Val Lys Gly Arg Ala Thr Ile Ser Arg Asp Asn Gly Gln Ser
 85 90 95

Thr Val Arg Leu Gln Leu Asn Asn Leu Arg Ala Glu Asp Thr Gly Thr
 100 105 110

Tyr Tyr Cys Thr Arg Gly Val Ser Pro Tyr Ser Cys Trp Tyr Ala Gly
 115 120 125

Arg Thr Ser Tyr Thr Cys His Ala Tyr Thr Ala Gly Ser Ile Asp Ala
 130 135 140

Trp Gly His Gly Thr Glu Val Ile Val Ser Ser
 145 150 155

<210> 103
 <211> 87
 <212> PRT
 <213> Homo sapiens

<400> 103

Glu Val Gln Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Trp Val
 20 25 30

Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Arg Phe Thr Ile
 35 40 45

Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu
50 55 60

Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Lys Trp Gly Gln Gly
65 70 75 80

Thr Leu Val Thr Val Ser Ser
85